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APR 16 2007

Amendment under 37 C.F.R. §1.114  
Serial No. 10/670,384  
Attorney Docket No. 031201

**REMARKS**

Claims 2, 3 and 5-10 are all the pending claims. Claims 1 and 4 are deleted.

Support for the amendments to claims 2 and 5 may be found in claims 1 and 4, respectively. Support for new claims 9 and 10 may be found in the specification as originally filed, for example, at page 8, lines 15-17.

**I. The Rejections Under 35 U.S.C. §103(a)**

Claims 1, 3 and 7 are rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over JP 2002-025611 A (JP '611) in view of U.S. Patent No. 6,632,572 (Takahashi) and either JP 2002-298909 (JP '909), JP 2002-110229 (JP '229) or JP 2002-050398 (JP '398).

Independent claim 1 has been cancelled. Therefore, this rejection is moot.

Claims 4, 6 and 8 are rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over JP '611 in view of Takahashi, JP '398 and either JP '909 or JP '229.

Independent claim 4 has been cancelled. Therefore, this rejection is moot.

Claim 2 is rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over JP '611 in view of Takahashi and either JP '909, JP '229 or JP '398, and further in view of U.S. Patent No. 6,818,351 (Sunagawa).

Claim 5 is rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over JP '611 in view of Takahashi, JP '398 and either JP '909 or JP '229, and further in view of U.S. Patent Sunagawa.

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Applicants respectfully submit that the present invention is not rendered obvious over the disclosures of the cited art and request that the Examiner reconsider and withdraw these rejections in view of the following remarks.

Generally, an increase in the bulk density of a lithium cobalt compound oxide as a positive electrode material increases the positive electrode capacity, but decreases cycle characteristics. Applicants' claims as amended have the features of using a lithium cobalt compound oxide as a positive electrode material at a bulk density in the positive electrode of 3.3 g/cm<sup>3</sup> or more and containing in the non-aqueous electrolyte a vinylene carbonate compound represented by Chemical formula 1 and other specified additives. See independent claims 2 and 5. This configuration provides the effect of inhibiting a decrease in cycle characteristics even when the bulk density of the lithium cobalt compound oxide is 3.3 g/cm<sup>3</sup> or more.

Sunagawa et al, cited in each of the rejections, does disclose a positive electrode having a positive electrode material at a bulk density of more than 3.3 g/cm<sup>3</sup>. However, the object of the invention of Sunagawa et al. is to improve load characteristics when a positive electrode material mixture of lithium cobalt compound oxide and lithium manganese oxide is used. Sunagawa et al. realizes this object by adjusting the ratio of lithium cobalt compound oxide and lithium manganese oxide, and making the average particle diameter of lithium manganese oxide larger than that of lithium cobalt compound oxide (see Abstract, Summary of Invention of Sunagawa et al.). Thus, the present invention and Sunagawa et al. differ in object and means to solve the object (configuration). This is described below in further detail.

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Sunagawa et al., column 5, lines 11-14 and 44-53, explicitly shows that the positive electrode active material is a mixture of a lithium cobalt oxide and a spinel lithium manganese oxide. Meanwhile, the positive electrode of the present invention is a lithium cobalt compound oxide, which distinguishes configuration of the invention from that of Sunagawa et al.

The difference between the present invention and Sunagawa et al. is further backed up by Fig. 1 of Sunagawa et al., which shows cell characteristics for varied mixture ratios X (X denoting the ratio of the lithium cobalt oxide to the positive electrode active material) of the lithium cobalt oxide and lithium manganese oxide and for varied bulk densities.

Fig. 1 shows that the peak regions of A, B, and C, where the lithium cobalt oxide and spinel lithium manganese oxide are mixed in a proper manner, show high load characteristics, whereas E and D, in which the lithium cobalt oxide is contained at 0.95 and 0.05, respectively, show far lower load characteristics than those of A to C at an increased bulk density. This indicates that the lithium cobalt oxide and spinel lithium manganese oxide need to be mixed at a proper ratio, and that use of lithium cobalt oxide alone cannot improve load characteristics.

As Applicants' previously argued, Fig. 3 of Sunagawa et al. only indicates a tendency of degraded load characteristics when the bulk density is  $3.0 \text{ g/cm}^3$  or more. This could suggest the technical problem of the present invention, but Sunagawa et al. describes no additives to the non-aqueous solution in order to alleviate the tendency. Also it should be noted that the fact that cycle characteristics degrade when the positive electrode bulk density is increased is described in Table 4 (comparative examples).

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Thus, the object of Sunagawa et al. is to improve load characteristics when a positive electrode material mixture of a spinel lithium manganese oxide and a lithium cobalt oxide is used, and this object is realized by adjusting the ratio of spinel lithium manganese oxide and lithium cobalt oxide (see Abstract and Detailed Description of The Invention). Meanwhile, the present invention uses a lithium cobalt compound oxide as a positive electrode material, and the object is to improve cycle characteristics when the bulk density of the lithium cobalt compound oxide in the positive electrode is  $3.3 \text{ g/cm}^3$  or higher. This object is realized by adding a certain additive to the non-aqueous solution.

Therefore, the inventions of Sunagawa et al. and the present application are not identical and differ from one another in the means to solve the problems. Further, there is no motivation to combine Sunagawa et al. with the other cited art of the rejections. Even if the disclosures of Sunagawa et al. are combined with the other cited art, Applicants' claimed invention would have not been obvious to one skilled in the art.

For the above reasons, it is respectfully submitted that the subject matter of claims 2, 3 and 5-10 is neither taught by nor made obvious from the disclosures of JP '611 in view of Takahashi and either JP '909, JP '229 or JP '398 and further in view of Sunagawa et al. or from the disclosures of JP '611 in view of Takahashi, JP '398 and either JP '909 or JP '229, and further in view of Sunagawa et al. and it is requested that the rejections under 35 U.S.C. §103(a) be reconsidered and withdrawn.

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## II. Conclusion

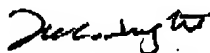
In view of the above, Applicants respectfully submit that their claimed invention is allowable and ask that the rejections under 35 U.S.C. §103 be reconsidered and withdrawn. Applicants respectfully submit that this case is in condition for allowance and allowance is respectfully solicited.

If any points remain at issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the local exchange number listed below.

If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,

WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP



Lee C. Wright

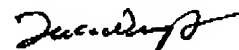
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LCW/af/mt

### CERTIFICATE OF FACSIMILE TRANSMISSION

I hereby certify that the attached Amendment under 37 CFR §1.114 (14 pp) is being formally transmitted via the USPTO Central Fax No. 571-273-8300 on April 16, 2007.



Lee C. Wright

Reg. No. 41,441